Engineering Challenges

PART-A

A part of the Prenetics platform provides the features for our customers to authenticate and retrieve their personal data and genetic results. Each customer's information consists of the following:

- first name
- last name
- email address
- password
- date of birth
- 8 alphanumeric policy code
- JSON object containing genetic result

This information should be stored in a transactional SQL database.

Questions

1. Design a database schema to record customer's information
2. Design and implement a RESTful service so that customers may
    a. Login and logout
    b. Retrieve personal data
    c. Retrieve genetic result
3. Design and implement a Web frontend application to serve the content provided by the RESTful service

Our technical stack is PERN (Postgres, Express, React, NodeJS).

Criteria

For the solution, provide us your source code, build instruction. You should also provide

1. The database design (data migration, data type, concurrency, security)
2. The API design (functional aspect, concurrency, security)
3. Any application and network level security consideration
4. Explanation on how to handle variable traffic
5. Explanation on how to handle secrets, configuration and environments
6. instructions to bring up the service.
7. a testing strategy for this service.

PART-B

We have a centralised authentication service that provides password based authentication for all our users across the platform. Everytime a user logs in, this service is invoked and a security context is passed back to the client. This context is then passed to the services which get back to the authentication service to verify the context. What are the options to scale this service?